

CONEY ISLAND CHANNEL AND ROCKAWAY INLET,  
NEW YORK.

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORT OF  
EXAMINATION AND SURVEY OF CONEY ISLAND CHANNEL  
AND ROCKAWAY INLET, NEW YORK.

JANUARY 9, 1907.—Referred to the Committee on Rivers and Harbors and  
ordered to be printed with accompanying illustration.

WAR DEPARTMENT,  
*Washington, January 8, 1907.*

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, of this date, together with copy of a report from Col. D. W. Lockwood, Corps of Engineers, dated December 31, 1906, with map, of an examination and survey of Coney Island channel and Rockaway Inlet, New York, made by him in compliance with the provisions of an act of Congress approved June 28, 1906.

Very respectfully,

WM. H. TAFT,  
*Secretary of War.*

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

WAR DEPARTMENT,  
OFFICE OF THE CHIEF OF ENGINEERS,  
*Washington, January 8, 1907.*

SIR: I have the honor to submit herewith for transmission to Congress report of December 31, 1906, with map, by Col. D. W. Lockwood, Corps of Engineers, on examination and survey authorized by act of Congress approved June 28, 1906, of—

Coney Island channel, New York, with a view to estimating the cost of securing a channel twenty feet deep and six hundred feet wide at low tide, extending from deep water southwest of Nortons Point eastwardly to deep water off Rockaway Inlet and across the bar lying west of Rockaway Inlet to deep water in Jamaica Bay.

The cost of securing the channel dimensions specified in the act through the Coney Island channel is estimated at \$168,300, and across the bar at Rockaway Inlet, \$714,560, \$505,120, and \$158,620, according to the location of the dredged cut. The annual charge for maintenance of the completed channels is \$20,000 for the Coney Island channel and \$194,880, \$137,760, and \$43,260, respectively, for the Rockaway Inlet channels.

I concur in the views expressed by the district officer and by the Board of Engineers for Rivers and Harbors that Coney Island channel is worthy of improvement by the General Government as proposed, but that it is not advisable at this time for the United States to undertake the improvement of Rockaway Inlet.

Very respectfully,

A. MACKENZIE,  
*Brig. Gen., Chief of Engineers, U. S. Army.*

The SECRETARY OF WAR.

EXAMINATION AND SURVEY OF CONEY ISLAND CHANNEL, AND THENCE  
TO ROCKAWAY INLET AND JAMAICA BAY, NEW YORK.

UNITED STATES ENGINEER OFFICE,  
*New York City, December 31, 1906.*

GENERAL: In compliance with instructions contained in Department letter dated July 10, 1906, I have the honor to submit the following report upon a survey of Coney Island channel and Rockaway Inlet, Long Island, New York:

This survey was made in compliance with act of Congress approved June 28, 1906, which provided for an examination and survey of—

Coney Island channel, New York, with a view to estimating the cost of securing a channel twenty feet deep and six hundred feet wide at low tide, extending from deep water southwest of Nortons Point eastwardly to deep water off Rockaway inlet and across the bar lying west of Rockaway Inlet to deep water in Jamaica Bay.

The area covered by the hydrography of the survey lies immediately south of Coney Island at the southwestern extremity of Long Island, New York, and extends from Nortons Point on the west to Barren Island in Jamaica Bay on the east, a distance of about 7 miles.

CONEY ISLAND CHANNEL.

Coney Island channel lies at the western end of this area about 4 miles in a south-southeasterly direction from The Narrows and is one of five channels which cross the bar that separates New York Lower Bay from the ocean.

In a report submitted November 4, 1886, and printed in the Annual Report of the Chief of Engineers for 1887, Part 1, page 732, the Board of Engineers says:

It must be stated that the Coney Island channel is very much used by steamboats running to watering places on the south side of Long Island, by oyster boats, sailboats, and tugs, and should be kept open. This was intended by the Board when its project was presented, but was omitted with the other details of execution.

Subsequently a report upon a preliminary examination of this channel, provided for in the river and harbor act of June 3, 1896, was submitted to the Department September 23, 1896, by Col. G. L. Gillespie, Corps of Engineers (now major-general, retired). In this report, printed in the Annual Report of the Chief of Engineers for 1897, Part 1, page 1049, General Gillespie says:

This channel is much used by small sailing vessels and steamers bound for Rockaway or other inlets on south shore of Long Island; by excursion steamers daily plying during the summer season between New York City and the iron pier at Coney Island or Rockaway Inlet, and by scows loaded with city refuse bound for the dumping buoy located in the deep pool west of the entrance to Rockaway Inlet. \* \* \* An obstruction to this channel which will require small craft bound to the small inlets to the eastward to go  $1\frac{1}{2}$  miles farther to the southward to the next succeeding channel through the Romer shoals will materially interfere with the navigation of the Main Ship channel by the large trans-Atlantic steamers and vessels. \* \* \* In my judgment the Coney Island channel is worthy of improvement by the General Government to the extent of increasing the depth to 16 feet at mean low water.

The views of General Gillespie were concurred in by the Chief of Engineers.

At the present time nearly all tows of every character by Sandy Hook enter and leave New York Harbor by the Swash channel. Some of these tows will string out for 1,200 yards. In entering or leaving Swash channel at its outer entrance they go practically across the Main Ship channel, and the heaviest draft vessels coming in or going out are frequently compelled to go to the bank to avoid a collision. These tows constitute a very serious menace to navigation therefore, and it appears highly important that some channel which they can use advantageously be provided in order to keep them out of the regular channels taken by other craft. The shipping interests of New York and vicinity are extremely urgent in asking for a safe and deep channel for these tows, and claim that if the proposed channel, 600 feet wide and 20 feet deep off Nortons Point, commonly known as the Coney Island channel, be provided, the dangers to navigation on account of tows will be largely avoided. Practically all the refuse material from the city of New York is now towed out to sea through the Swash channel and dumped about  $2\frac{1}{2}$  miles southeast of the Scotland light-ship. This applies also to the dumping of dredged material, which has to be disposed of outside of the harbor of New York. Quite a number of these tows when returning empty pass through the present Coney Island channel if the tide serves right at the time.

The commercial interests involved in this project are those of the city of New York and other cities whose commerce passes out by or comes in by Sandy Hook. It is therefore not considered necessary to give any detailed figures covering this feature, as the published statistics of the harbor of New York give all the information that would appear to be necessary.

All the passenger and excursion steamers to and from Rockaway Inlet and Coney Island pass through Coney Island channel, and such freight carriers as can enter the inlet also take this route, so that the statistics for Rockaway Inlet and Jamaica Bay apply to this channel as well.

This channel was dredged in 1900 to a width of from 500 to 560 feet and depth of 14 feet at mean low water by removing 38,460



cubic yards of material (see Annual Report of the Chief of Engineers for 1901, Part 2, p. 1287). It was restored to a width of 400 feet and depth of 14 feet in 1905 by the excavation of 21,649 cubic yards (see Annual Report of the Chief of Engineers for 1906, Part 1, p. 970).

To widen Coney Island channel to 600 feet and deepen it to 20 feet at mean low water, with side slopes of 1 to 3, will necessitate the removal of 510,000 cubic yards of material, mostly sand, provided the improvement can be carried to completion within one year, or two at most. A certain amount of shoaling will undoubtedly occur during the progress of the work, and the longer the period required for completion the greater will be the amount of material to be removed.

The last contract for dredging in this locality cost 36 cents per cubic yard, but this was for only 20,000 cubic yards. The situation is an exposed one requiring for economical work a seagoing dredge, and it is assumed that the cost per cubic yard will be at least 30 cents, making the cost of the original dredging \$153,000, or, adding 10 per cent for inspection and engineering contingencies, \$168,300.

It would appear from past experience that \$20,000 will be required annually for maintenance.

In view of the vast commercial interests involved and the safety of navigation in the main ship channels leading into New York, I have no hesitation in stating that in my opinion this work is worthy of being undertaken by the General Government.

#### ROCKAWAY INLET.

Rockaway Inlet is located in the eastern end of the surveyed area, immediately north of Rockaway Point and Beach, and connects Jamaica Bay with the ocean. The mouth of the inlet is obstructed by a bar which, at the time of the survey, had a least depth over it of one-half foot at mean low water. Immediately to the north of the main bar, opposite Dead Horse Inlet, there is at the present time a channel, about 300 feet wide at its narrowest part, and 11 to 12 feet deep at mean low water. From the best information obtainable, it appears this channel has been in existence only a short time. To the south of this bar there is another channel, several hundred feet wide and about 12 feet deep at mean low water.

The bar is constantly shifting in position and changing in outline, due to storms and other causes, and Rockaway Point, from the best information, is steadily moving westward at a rate not less than 200 feet per annum; and in some instances this change has been as much as 300 feet.

Because of these changes the channels are also constantly changing in position and varying in depth at more or less frequent intervals, and there would appear to be little doubt but that an artificial channel would be no more permanent than the ordinary natural channels.

In the Annual Report of the Chief of Engineers for 1878, Part 1, pages 425-426, General Newton, in reporting on Rockaway Inlet, states as follows:

The Coast Survey of 1855-56 shows a depth over the bar of 9 feet at mean low water, and the recent examination in 1877 shows an improved depth of 15 feet. The first survey makes the channel from the inlet to the bar much curved, presenting its concavity to the eastward. The last survey shows a straight channel, its direction being a little to the west of south.

It is quite likely, from this information as well as from general principles, that the straight channel, under like circumstances, would always correspond to the greatest depth over the bar, though a more lengthened course of observations would be needed to demonstrate absolutely this conclusion, and what is more important, to point out what direction given to the channel would correspond to the greatest possible depth on the bar.

This inlet with the shoals attached has moved westward from 1856 to 1877, a period of twenty-one years, a distance of 4,620 feet, being at the rate of 220 feet per year. An attempt to arrest this movement by artificial works would be successful only after enormous expenditures, and would inevitably result in the obliteration of the Inlet itself. The sole improvement, therefore, of which this entrance is susceptible consists in giving the proper direction to its channel, and this can be done by constructing a series of groins upon the eastern shoal to encroach upon the eastern edge of the channel at those places where it may be found necessary to remedy or modify a curvature in the course of the channel. It is obvious that these constructions will not interfere with the free movement westward of the shoals and inlet. \* \* \*

According to the present rate of advance westward Rockaway Inlet in about sixty years will have moved with its shoals and have become mixed with the passes and shoals of New York Harbor lying between Sandy Hook and Coney Island. When this shall happen the inlet will be practically closed.

But there is no certainty that the present rate of advance will be maintained, because the information is not available to determine whether the currents from New York Bay may not seriously check and modify such movement.

Whatever may be its duration, it is but fair to grant the strong probability that sooner or later the inlet must close for commercial purposes, and hence the scheme of improvement adopted should be inexpensive, like that recommended in a former part of this report. \* \* \*

The channel leading into Rockaway Inlet is now straight and maintains the considerable depth of 15 feet over the bar, which is amply sufficient for all present and future commercial purposes.

In the Annual Report of the Chief of Engineers for 1879, Part 1, page 400, General Newton states as follows concerning this inlet:

No permanent improvement, based upon fixing in its present position the course of the inlet, is possible; and no improvement should be contemplated which aims at more than temporary benefit by works undertaken at infrequent and irregular intervals, with the object of insuring a reasonably direct discharge of water over the bar. Further consideration has led to no change in the views upon this improvement expressed in report from this office of March 8, 1878. (See Annual Report of Chief of Engineers for 1878, Appendix D, pp. 425, 426.)

At the date of the last survey of 1877 there was a depth in the inlet of 15 feet, and no improvement was needed.

A comparison of the map of the present survey with that of General Newton made in 1878 shows that many changes have taken place in the general locality within the last twenty-nine years. There has been a general recession of the Coney Island shore near the inlet; in fact, the whole of the eastern end of Coney Island as it existed in 1877 has now entirely disappeared, and at the same time Rockaway Point has advanced toward the southwest about 1 mile.

It has been suggested that if a channel be dredged following approximately the present channel near Dead Horse Inlet (marked A on tracing) and which is now buoyed out, it would be likely to keep open, for the reason that it would be in a measure protected by the bar between it and the sea; but if any marked increase in the volume of water by this route should be secured, it might lead to a more rapid advance of Rockaway Point. It would, however, in all probability soon shoal up and return to its original unstable condition. To open this channel with a bottom width of 600 feet and a depth of 20 feet, the side slopes being 1 on 3, would require the removal of 1,856,000 cubic yards of material. In my opinion, no dredged channel lead-



ing into the inlet would be reasonably permanent or of much aid to navigation, as under the influence of storms and tidal currents the tendency would be for the bar off the inlet to return to its normal condition. General Newton, in his report quoted above, states, referring to the movement westward of Rockaway Point:

An attempt to arrest this movement by artificial works would be successful only after enormous expenditures, and would inevitably result in the obliteration of the inlet itself.

In 1856 the deepest water in any channel through the bar off the inlet was 9 feet. In 1878 General Newton reported 15 feet, while the present survey shows 12 feet. The channel of 1856 was curved with its concavity toward the east, the other two were straight and leading south. The site of the old channel of 1856 is nearly 2 miles to the east of the present one, while that of the channel of 1878 is about midway between these two.

Three channels are indicated on the tracing herewith for purposes of comparison. Channel A follows the line of deepest water around by Dead Horse Inlet. This is the channel now used, and is buoyed. To widen it to 600 feet and deepen it to 20 feet, the side slopes being 1 to 3, will require the removal of 1,856,000 cubic yards, scow measurement, which, at 35 cents per cubic yard, amounts to \$649,600. Channel B will require the removal of 1,312,000 cubic yards, which, at 35 cents per cubic yard, amounts to \$459,200. Channel C will require the removal of 412,000 cubic yards, which, at 35 cents per cubic yard, amounts to \$144,200. Any estimate for fill during the progress of the work or thereafter would be entirely conjectural—but, in my opinion, not less than 30 per cent of first cost. The estimates for maintenance would then be, for channel A, \$194,880; for channel B, \$137,760, and for channel C, \$43,260.

The extension of Rockaway Point to the southwest is due to the movement of sand from the east. So long as the bar at the mouth of the inlet exists, forcing the current to the south across the line of advance of the point, its effect is to retard its progress, and under ordinary conditions this will continue until the point has advanced so far that the shoals, currents, etc., at the entrance to New York Bay have greater effect than now, and then new problems will be presented having to do with the effect of the changed conditions on the channels, etc., leading to New York Harbor. The diversion or diminution of the southerly current at Rockaway Point, by opening new channels from the inlet to the west, if they could be kept open, would, in my opinion, cause a more rapid advance westward of the point, at least for some time.

The mouth of the southern channel under the influence of tidal currents, storms, and the annual advance of Rockaway Point wanders about so that any attempt to hold it would be extremely expensive, as cheap auxiliary works would soon be destroyed; benefits from dredging would be but temporary.

While the commercial importance of Jamaica Bay, and more especially its commercial possibilities, would be sufficient to justify a large expenditure in providing a suitable entrance were the conditions at all favorable, under the circumstances I do not recommend the dredging of a channel as specified in the act, on account of its great original cost and the cost of maintenance thereafter, and because

the opening of a westerly channel would most likely lead to a more rapid advance of Rockaway Point than obtains at present.

The amount and value of commerce of Jamaica Bay per year, as obtained from various sources, is as follows:

*Commercial statistics.*

Article.	Tons.	Value.
General merchandise .....		
Iron .....	50,000	\$1,000,000
Solder, tin, and lead .....	1,500	18,000
Ore .....	4,300	1,202,000
Coal and other fuel .....	4,000	1,000,000
Brick .....	61,160	350,447
Building stone .....	7,450	66,396
Broken stone .....	5,500	9,840
Cement, lime, and sand .....	24,000	48,000
Lumber and timber .....	14,200	60,712
Oil, grease, etc. ....	11,450	219,727
Hides .....	80,000	3,550,000
Fertilizer .....	500	25,000
Oysters .....	1,002,000	4,000,000
Ice .....	31,500	10,000,000
	7,700	30,800
Total .....	1,303,260	22,140,922

*Summary of estimated cost.*

Coney Island channel:

510,000 cubic yards dredging, scow measurement, at 30 cents per cubic yard .....	\$153,000
Engineering and contingencies, 10 per cent .....	15,300
Total .....	168,300

Rockaway Inlet:

Channel A—

1,856,000 cubic yards dredging, scow measurement, at 35 cents per cubic yard .....	649,600
Engineering and contingencies, 10 per cent .....	64,960
Total .....	714,560

Channel B—

1,312,000 cubic yards dredging, scow measurement, at 35 cents per cubic yard .....	459,200
Engineering and contingencies, 10 per cent .....	45,920
Total .....	505,120

Channel C—

412,000 cubic yards dredging, scow measurement, at 35 cents per cubic yard .....	144,200
Engineering and contingencies, 10 per cent .....	14,420
Total .....	158,620

Very respectfully, your obedient servant,

D. W. Lockwood,  
*Colonel, Corps of Engineers.*

Brig. Gen. A. MACKENZIE,  
*Chief of Engineers, U. S. A.*

[Second Indorsement.]

## BOARD OF ENGINEERS FOR RIVERS AND HARBORS.

*Washington, D. C., January 5, 1907.*

Respectfully returned to the Chief of Engineers, United States Army.

The within is a report made in compliance with an act of Congress approved June 28, 1906, as follows:

Coney Island channel, New York, with a view to estimating the cost of securing a channel twenty feet deep and six hundred feet wide at low tide, extending from deep water southwest of Nortons Point eastwardly to deep water off Rockaway Inlet and across the bar lying west of Rockaway Inlet to deep water in Jamaica Bay.

For purposes of estimate a survey of the locality was made by the district officer, the results of which are shown on the accompanying tracing, on which is indicated the position of the proposed Coney Island channel and three alternative channels off Rockaway Inlet for the entrance to Jamaica Bay.

The estimated cost, including 10 per cent for contingencies, of the Coney Island channel is \$168,300, with \$20,000 annually for maintenance, and for the Rockaway Inlet channels A, B, and C, \$714,560, \$505,120, and \$158,620, respectively, with 30 per cent of first cost annually for maintenance, which amounts to \$194,880 for channel A, \$137,760 for channel B, and \$43,260 for channel C.

The commerce interested in the Coney Island channel involves practically all that enters or departs from New York Harbor, for while the deep-draft steamers and sailing vessels will continue to use the main channels, these channels would, by the construction of the Coney Island channel, be relieved of congestion and danger caused by the presence of a great number of long tows which now have to use the main channels, but which would to a considerable extent be diverted to the Coney Island channel if made available. In addition to this class of navigation, all excursion vessels plying between New York and Coney Island or Rockaway Inlet, as well as all freight carriers bound to or from Jamaica Bay or other south Long Island ports, would be expected to use this channel almost exclusively, and the tonnage carried by the latter class of vessels amounts to several millions of tons annually.

The formation of this channel would be a simple dredging proposition, and it seems probable that it could be maintained in a fairly permanent position.

In view of the great benefits to the vast navigation interests of this locality that may reasonably be expected to result from this proposed channel, and believing its cost to be reasonable, the Board concurs in the opinion of the district officer that this is a work worthy to be undertaken by the United States.

From the within report and such other data as are available it appears that the Rockaway Inlet channel is very unstable in position. This is due principally to the drift of sand resulting in a continuous advance of Rockaway Point and the adjacent shoals to the westward. Any unprotected dredged channel would be short lived and the cost of maintenance excessive. Works of a permanent character would be very expensive and in time would be engulfed by the drifting sands and their functions rendered inoperative.



The commerce of Jamaica Bay is considerable, and would be somewhat benefited by a stable and deeper channel through the inlet. The extent of the benefits would, however, appear to be limited to a small part of the total commerce of the bay for the reason that outside of Rockaway Beach itself there are few, if any, localities of importance where the available navigable depth exceeds the natural depth—12 to 14 feet—at the inlet.

In view of the shifting character of the material through which a channel would have to be dredged and the excessive cost of its maintenance the Board concurs in the views of the district officer that it is not advisable at this time for the United States to undertake the improvement of Rockaway Inlet.

For the Board:

E. EVELETH WINSLOW,  
Major, Corps of Engineers,  
Senior Member Present.

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NEW YORK HARBOR, N.Y.  
AND VICINITY

Reduced from U.S.C. and G.S. Chart No. 1170, Pub. 0-11901

Scale 1:40,000



CONEY ISLAND CHANNEL AND ROCKAWAY INLET  
NEW YORK.

Surveyed in compliance with River and Harbor Act approved June 28-1906.

Under the direction of

COL. D.W. LOCKWOOD, CORPS OF ENGRS. U.S.A.

by

Geo. F. Whittemore and W.L. Kuehnle, Jun. Engrs.

Sept.-Nov.-1906.

Scale 1 inch = 1500 ft.



Note.

Soundings are expressed in feet and tenths and refer to the Mean Low Water Plane of the U.S. and G.S. Bench Mark No. 2. The B.M. is a square cut in top of Stringer of Manhattan Beach Bulkhead at Elevation 10.44 ft. above M.L.W. The U.S. and G.S. Stations shown thus  $\Delta$  were used as a basis of measurement. Limiting lines of proposed channels are shown thus: ————

Plotted and drawn by E.F. Maurer

A T L A N T I C

ENGINEER OFFICE U.S.A.

New York, N.Y. Dec 31-1906.

To accompany Report of this date to the Chief of Engineers, U.S.A.

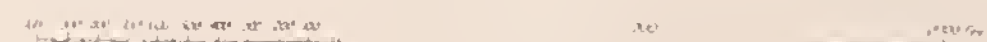
D.W. Lockwood

Colonel, Corps of Engineers, U.S.A.

Note - The soundings and descriptions in this chart are the property of the U.S. Government and are not to be used for any other purpose without the express permission of the Chief of Engineers, U.S.A.

CONEY ISLAND CHANNEL

Scale 1 inch = 500 ft.



ROCKAWAY INLET

Scale 1 inch = 500 ft.





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